

## **SEMICONDUCTOR PACKAGE HAVING A THERMALLY AND ELECTRICALLY CONNECTED HEATSPREADER**

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### **ABSTRACT OF THE DISCLOSURE**

Embodiments of the invention include a semiconductor integrated circuit package that includes a substrate having an integrated circuit die attached thereto. The substrate includes at least one electrical ground plane and includes a plurality solder balls formed on a surface thereof. The solder balls include a set of “thermal” solder balls that are positioned near the perimeter of the package and electrically connected with a ground plane of the package. The IC die is electrically connected with the ground plane that is connected with the “thermal” solder balls. A heat spreader is mounted on the package with conductive mounting pegs that are electrically connected with the ground plane. The heat spreader is in thermal communication with the die and also in thermal communication with the set of “thermal” solder balls. This configuration enables a portion of the heat generated by the die to be dissipated from the die through the heat spreader into the set of “thermal” solder balls. Additionally, the package can be configured so that the combination of the electrically connected heat spreader, ground plane, and conductive mounting pegs operate together as a electromagnetic shield that reduces the amount of electrical noise of the package.